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=> s lysine(w)rich and seed and protein and zein
L1            4 LYSINE(W) RICH AND SEED AND PROTEIN AND ZEIN

=> d l1 1-4 ibib ab

L1   ANSWER 1 OF 4  AGRICOLA  Compiled and distributed by the National
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     (2004) on STN
ACCESSION NUMBER:         1998:49315  AGRICOLA
DOCUMENT NUMBER:          IND21243126
TITLE:                      ***Lysine***  -  ***rich***  modified gamma-
                            ***zeins***  accumulate in  ***protein***  bodies
                          of transiently transformed maize endosperms.
AUTHOR(S):                Torrent, M.; Alvarez, I.; Geli, M.I.; Dalcol, I.;
                          Ludevid, D.
AVAILABILITY:             DNAL (QK710.P62)
SOURCE:                   Plant molecular biology, May 1997. Vol. 34, No. 1. p.
                          139-149
                          Publisher: Dordrecht : Kluwer Academic Publishers.
                          CODEN: PMBIDB; ISSN: 0167-4412
NOTE:                     Includes references
PUB. COUNTRY:             Netherlands
DOCUMENT TYPE:            Article
FILE SEGMENT:             Non-U.S. Imprint other than FAO
LANGUAGE:                 English
AB   During maize  ***seed***  development, endosperm cells synthesize large
     amounts of storage  ***proteins***  , alpha-, beta-, and gamma-
       ***zeins***  , which accumulate within endoplasmic reticulum (ER)-derived
       ***protein***  bodies. The absence of lysine in all  ***zein***
     polypeptides results in an imbalance in the amino acid composition of
     maize  ***seeds***  . We modified the maize gamma-  ***zein***  gene
     through the introduction of  ***lysine***  -  ***rich***  (Pro-Lys)n
     coding sequences at different sites of the gamma-  ***zein***  coding
     sequence. Maize endosperms were transiently transformed by biolistic
     bombardment with Lys-rich gamma-  ***zein***  constructs under the
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Pro-Xaa region of the gamma- ***zein*** , high levels of ***protein*** were observed. In contrast, when (Pro-Lys)n, sequences were inserted five residues from the C-terminal, the transcript was present but modified ***protein*** was not detected. These results suggest that only an appropriate positioning of Lys-rich inserts leads to the modified molecule displaying correct folding and stability. Subcellular localization analyses and immunoelectron microscopy studies on isolated ***protein*** bodies demonstrated that modified gamma- ***zeins*** accumulate within these organelles and co-localized with endogenous alpha- and gamma- ***zeins*** . The studies reported here show the feasibility of manipulating the gamma- ***zein*** gene in order to obtain stable and correctly targeted Lys-rich ***zeins*** in maize ***seeds*** .

L1 ANSWER 2 OF 4 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 1997:320606 BIOSIS
DOCUMENT NUMBER: PREV199799611094
TITLE: ***Lysine*** - ***rich*** modified gamma- ***zeins*** accumulate in ***protein*** bodies of transiently transformed maize endosperms.
AUTHOR(S): Torrent, Margarita; Alvarez, Inaki; Geli, M. Isabel; Dalcol, Ionara; Ludevid, Dolors [Reprint author]
CORPORATE SOURCE: Dep. de Genetia Molecular, Centre d'Investigacio i Desenvolupament, 08034 Barcelona, Spain
SOURCE: Plant Molecular Biology, (1997) Vol. 34, No. 1, pp. 139-149.
CODEN: PMBIDB. ISSN: 0167-4412.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 26 Jul 1997
Last Updated on STN: 26 Jul 1997

AB During maize ***seed*** development, endosperm cells synthesize large amounts of storage ***proteins*** , alpha-, beta-, and gamma- ***zeins*** , which accumulate within endoplasmic reticulum (ER)-derived ***protein*** bodies. The absence of lysine in all ***zein*** polypeptides results in an imbalance in the amino acid composition of maize ***seeds*** . We modified the maize gamma- ***zein*** gene through the introduction of ***lysine*** - ***rich*** (Pro-Lys), coding sequences at different sites of the gamma- ***zein*** coding sequence. Maize endosperms were transiently transformed by biolistic bombardment with Lys-rich gamma- ***zein*** constructs under the control of the 1.7 kb gamma- ***zein*** ***seed*** -specific promoter and the cauliflower mosaic virus (CaMV) 35S promoter. When (Pro-Lys), sequences were inserted contiguous to or in substitution of the Pro-Xaa region of the gamma- ***zein*** , high levels of ***protein*** were observed. In contrast, when (Pro-Lys)-n sequences were inserted five residues from the C-terminal, the transcript was present but modified ***protein*** was not detected. These results suggest that only an appropriate positioning of Lys-rich inserts leads to the modified molecule displaying correct folding and stability. Subcellular localization analyses and immunoelectron microscopy studies on isolated ***protein*** bodies demonstrated that modified gamma- ***zeins*** accumulate within these organelles and co-localized with endogenous alpha- and gamma- ***zeins*** . The studies reported here show the feasibility of manipulating the gamma- ***zein*** gene in order to obtain stable and correctly targeted Lys-rich

ACCESSION NUMBER: 1997:367431 CAPLUS
DOCUMENT NUMBER: 127:92732
TITLE: ***Lysine*** - ***rich*** modified .gamma.- ***zeins*** accumulate in ***protein*** bodies of transiently transformed maize endosperms
AUTHOR(S): Torrent, Margarita; Alvarez, Inaki; Geli, M. Isabel; Dalcol, Ionara; Ludevid, Dolors
CORPORATE SOURCE: Departament de Genetica Molecular, Centre d'Investigacio i Desenvolupament, (CSIC), Barcelona, 08034, Spain
SOURCE: Plant Molecular Biology (1997), 34(1), 139-149
CODEN: PMBIDB; ISSN: 0167-4412
PUBLISHER: Kluwer
DOCUMENT TYPE: Journal
LANGUAGE: English

AB During maize ***seed*** development, endosperm cells synthesize large amts. of storage ***proteins*** , .alpha.-, .beta.-, and .gamma.- ***zeins*** , which accumulate within endoplasmic reticulum (ER)-derived ***protein*** bodies. The absence of lysine in all ***zein*** polypeptides results in an imbalance in the amino acid compn. of maize ***seeds*** . We modified the maize .gamma.- ***zein*** gene through the introduction of ***lysine*** - ***rich*** (Pro-Lys)n coding sequences at different sites of the .gamma.- ***zein*** coding sequence. Maize endosperms were transiently transformed by biolistic bombardment with Lys-rich .gamma.- ***zein*** constructs under the control of the 1.7 kb .gamma.- ***zein*** ***seed*** -specific promoter and the cauliflower mosaic virus (CaMV) 35S promoter. When (Pro-Lys)n sequences were inserted contiguous to or in substitution of the Pro-Xaa region of the .gamma.- ***zein*** , high levels of ***protein*** were obsd. In contrast, when (Pro-Lys)n sequences were inserted five residues from the C-terminal, the transcript was present but modified ***protein*** was not detected. These results suggest that only an appropriate positioning of Lys-rich inserts leads to the modified mol. displaying correct folding and stability. Subcellular localization analyses and immunoelectron microscopy studies on isolated ***protein*** bodies demonstrated that modified .gamma.- ***zeins*** accumulate within these organelles and co-localized with endogenous .alpha.- and .gamma.- ***zeins*** . The studies reported here show the feasibility of manipulating the .gamma.- ***zein*** gene in order to obtain stable and correctly targeted Lys-rich ***zeins*** in maize ***seeds*** .

L1 ANSWER 4 OF 4 CAPLUS
ACCESSION NUMBER: 1997:60561 CAPLUS
DOCUMENT NUMBER: 126:87158
TITLE: Characterization of the variability in lysine content for normal and opaque2 maize endosperm
AUTHOR(S): Moro, Gloverson L.; Habben, Jeffrey E.; Hamaker, Bruce R.; Larkins, Brian A.
CORPORATE SOURCE: Dep. Plant Sciences, Univ. Arizona, Tucson, AZ, 85721, USA
SOURCE: Crop Science (1996), 36(6), 1651-1659
CODEN: CRPSAY; ISSN: 0011-183X
PUBLISHER: Crop Science Society of America, Inc.
DOCUMENT TYPE: Journal

increasing the content of this essential amino acid in endosperm ***proteins*** depends on understanding the mechanisms regulating the synthesis and accumulation of ***lysine*** - ***rich*** ***proteins*** . The variability for lysine and ***protein*** contents was studied in maize endosperm. Amts. of total ***protein*** , ***zeins*** , and non- ***zeins*** measured by microKjeldahl, and lysine content, estd. by amino acid anal., were detd. for 93 maize inbreds. Addnl., an ELISA was used to est. the relative content of the ***protein*** synthesis factor EF-1.alpha. in 20 selected genotypes. Considerable differences in lysine content were obsd. among normal and opaque2 genotypes, with the effect of the mutation being highly dependent on the genetic background. A high correlation was detected between the lysine content and the concn. of total non- ***zein*** ***proteins*** and EF-1.alpha.. An assay for EF-1.alpha. concn. may provide a simple and inexpensive method from breeding programs to select for improved ***protein*** quality.

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> s seed and protein and gamma and zein
L2 91 SEED AND PROTEIN AND GAMMA AND ZEIN

=> duplicate remove l2
DUPLICATE PREFERENCE IS 'AGRICOLA, BIOSIS, EMBASE, CAPLUS'
KEEP DUPLICATES FROM MORE THAN ONE FILE? Y/(N):n
PROCESSING COMPLETED FOR L2
L3 59 DUPLICATE REMOVE L2 (32 DUPLICATES REMOVED)

=> d l3 1-10

L3 ANSWER 1 OF 59 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:174715 CAPLUS
TI Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry Analysis of ***Zeins*** in Mature Maize Kernels
AU Adams, Whitney R.; Huang, Shihshieh; Kriz, Alan L.; Luethy, Michael H.
CS Mystic Research, Monsanto Company, Mystic, CT, 06355, USA
SO Journal of Agricultural and Food Chemistry (2004), 52(7), 1842-1849
CODEN: JAFCAU; ISSN: 0021-8561
PB American Chemical Society
DT Journal
LA English
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 59 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:242097 CAPLUS
DN 138:267201
TI Pesticidal compositions for coating plant propagation material containing anthranilamides
IN Berger, Richard Alan; Flexner, John Lindsey
PA E. I. Du Pont de Nemours & Co., USA
SO PCT Int. Appl., 147 pp.
CODEN: PIXXD2
DT

Lys rich zeins in maize ***seeds*** .

=> d l3 36 ibib ab

L3 ANSWER 36 OF 59 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 11

ACCESSION NUMBER: 97:33751 AGRICOLA
DOCUMENT NUMBER: IND20564663
TITLE: The maize ***gamma*** - ***zein*** sequesters alpha- ***zein*** and stabilizes its accumulation in ***protein*** bodies of transgenic tobacco endosperm.
AUTHOR(S): Coleman, C.E.; Herman, E.M.; Takasaki, K.; Larkins, B.A.
CORPORATE SOURCE: Brigham Young University, Provo, UT.
AVAILABILITY: DNAL (QK725.P532)
SOURCE: The Plant cell, Dec 1996. Vol. 8, No. 12. p. 2335-2345
Publisher: [Rockville, MD : American Society of Plant Physiologists, c1989-
CODEN: PLCEEW; ISSN: 1040-4651
NOTE: Includes references
PUB. COUNTRY: Maryland; United States
DOCUMENT TYPE: Article
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English

AB ***Zeins*** are ***seed*** storage ***proteins*** that form accretions called ***protein*** bodies in the rough endoplasmic reticulum of maize endosperm cells. Four types of ***zeins*** , alpha, beta, ***gamma*** , and delta, aggregate in a distinctive spatial pattern within the ***protein*** body. We created transgenic tobacco plants expressing alpha- ***zein*** , ***gamma*** - ***zein*** , or both to examine the interactions between these ***proteins*** leading to the formation of ***protein*** bodies in the endosperm. Whereas ***gamma*** - ***zein*** accumulated in ***seeds*** of these plants, stable accumulation of alpha- ***zein*** required simultaneous synthesis of ***gamma*** - ***zein*** . The ***zein*** ***proteins*** formed accretions in the endoplasmic reticulum similar to those in maize endosperm. ***Protein*** bodies were also found in ***protein*** storage vacuoles. The accumulation of both types of ***zeins*** peaked early in development and declined during maturation. Even in the presence of ***gamma*** - ***zein*** , there was a turnover of alpha- ***zein*** , suggesting that the interaction between the two ***proteins*** might be transitory. We suggest that ***gamma*** - ***zein*** plays an important role in ***protein*** body formation and demonstrate the utility of tobacco for studying interactions between different ***zeins*** .

=> s gamma(w)zein and transform?
L4 35 GAMMA(W) ZEIN AND TRANSFORM?

KEEP DUPLICATES FROM MORE THAN ONE FILE? Y/(N):N
PROCESSING COMPLETED FOR L4
L5 20 DUPLICATE REMOVE L4 (15 DUPLICATES REMOVED)

=> d l5 1-20 ti

L5 ANSWER 1 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN
TI Production of peptides and proteins by accumulation in plant endoplasmic reticulum-derived protein bodies

L5 ANSWER 2 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN
TI Self-processing transgenic plants and plant parts expressing hyperthermophilic processing enzymes

L5 ANSWER 3 OF 20 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 1
TI Expression of the ***gamma*** - ***zein*** protein of maize in seeds of transgenic barley: effects on grain composition and properties.

L5 ANSWER 4 OF 20 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN DUPLICATE 2
TI Zein accumulation in forage species (Lotus corniculatus and Medicago sativa) and co-expression of the ***gamma*** - ***zein*** :KDEL and beta-zein: KDEL polypeptides in tobacco leaf.

L5 ANSWER 5 OF 20 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN DUPLICATE 3
TI Combination of viral promoter sequences to generate highly active promoters for heterologous therapeutic protein over-expression in plants.

L5 ANSWER 6 OF 20 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2004) on STN
TI Expression of a synthetic E. coli heat-labile enterotoxin B sub-unit (LT-B) in maize.

L5 ANSWER 7 OF 20 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN DUPLICATE 4
TI Expression of a synthetic porcine alpha-lactalbumin gene in the kernels of transgenic maize.

L5 ANSWER 8 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN
TI Geminivirus replicases and the genes encoding them and their use to create polyploid plant cells

L5 ANSWER 9 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN
TI Methods of using viral replicase polynucleotides and polypeptides in transgenic plants

L5 ANSWER 10 OF 20 AGRICOLA Compiled and distributed by the National

Search Results -

Terms	Documents
L7 and lysine adj enriched	5

Database: US Pre-Grant Publication Full-Text Database; US Patents Full-Text Database; US OCR Full-Text Database; EPO Abstracts Database; JPO Abstracts Database; Derwent World Patents Index; IBM Technical Disclosure Bulletins

Search: L8

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DATE: Monday, April 12, 2004 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=OR			
L8	L7 and lysine adj enriched	5	L8
L7	zein and lysine and enriched	97	L7
L6	maize and increased adj lysine	44	L6
L5	maize and increased adj lusine	0	L5
DB=DWPI; PLUR=YES; OP=OR			
L4	L3 and proline	1	L4
L3	wo adj 9312230	5	L3
L2	WO adj 9315221	4	L2
L1	WO 9315221	915453	L1

END OF SEARCH HISTORY